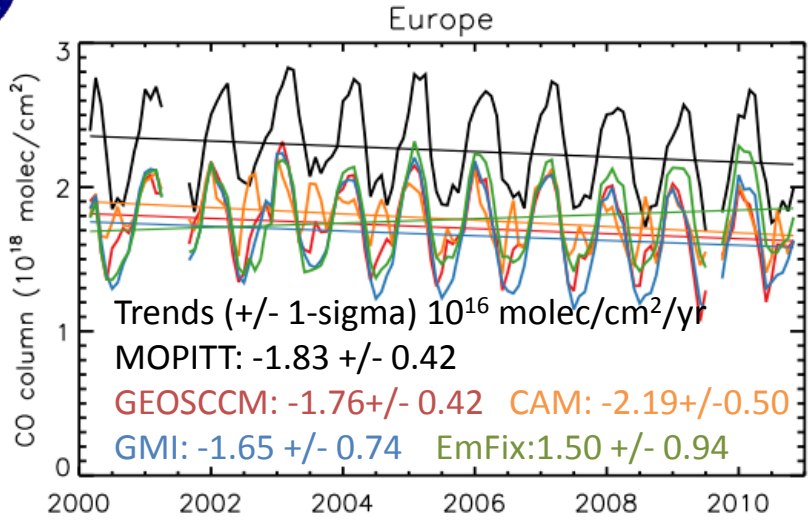
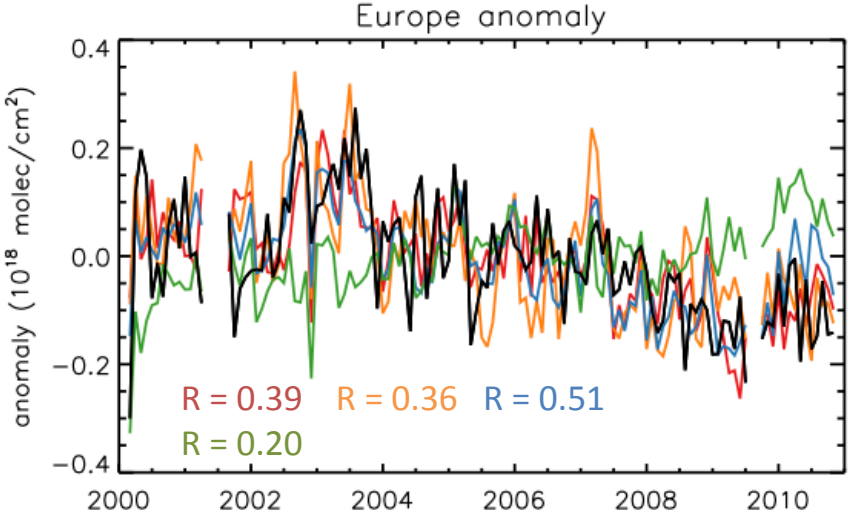
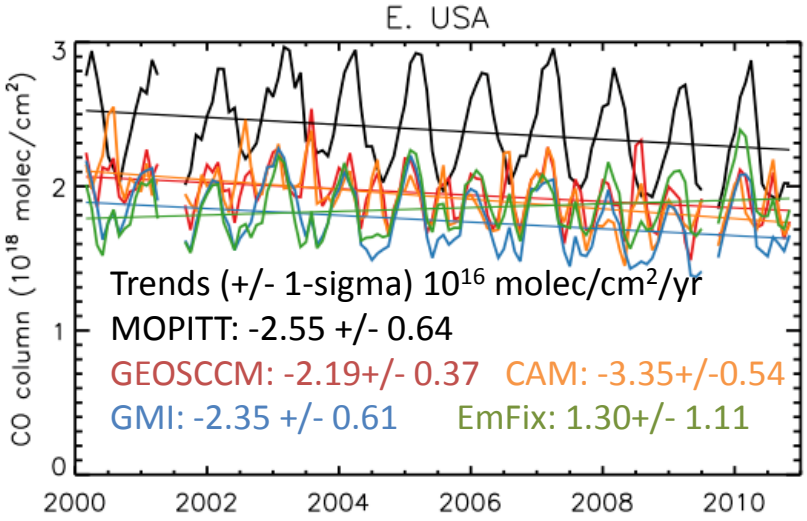
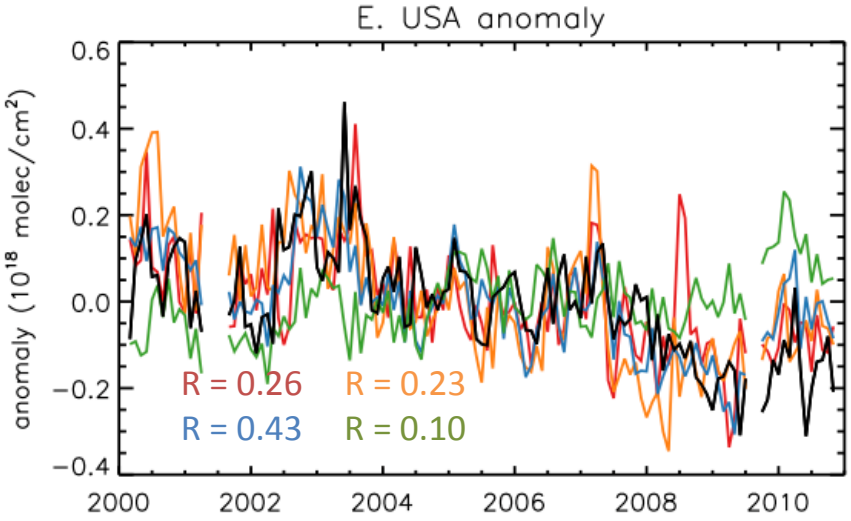
CO Trends over Europe and E. USA:









- Although biased low compared with MOPITT, GEOSCCM CAM4-Chem and GMI track MOPITT trends over Europe and the eastern US using time-dependent emissions.
- MOPITT anomalies correlate best with GMI anomalies (analyzed meteorology)

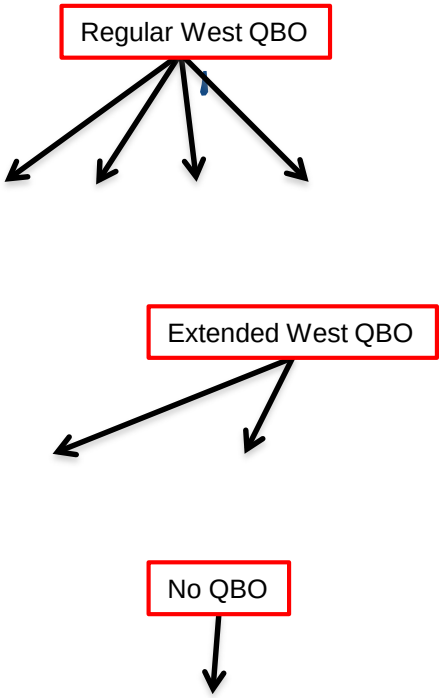
Effects of Geoengineering on the Quasi-Biennial Oscillation

V. Aquila, C. I. Garfinkel, P. A. Newman, L. D. Oman, D. W. Waugh, NASA GSFC and JHU

The quasi-biennial oscillation (QBO) affects temperatures and transport of air into and out of the tropics, and is the main source of variability in the tropical stratosphere.

Using GEOSCCM and its realistic internally generated QBO, we quantified the effects of a few geoengineering scenarios on the QBO and found it to be significantly disrupted.

The injected sulfate aerosols warm the lower stratosphere, prolonging the phase of westerly winds. High sulfate aerosol burdens completely eliminate the wind oscillation.



– 0

Easterlies ***Westerlies***

Aquila, V., C. I. Garfinkel, P. A. Newman, L. D. Oman, and D. W. Waugh, 2014: Modifications of the quasi-biennial oscillation by a geoengineering perturbation of the stratospheric aerosol layer, *Geophys. Res. Lett.*, 41, 1738–1744, doi:10.1002/2013GL058818.

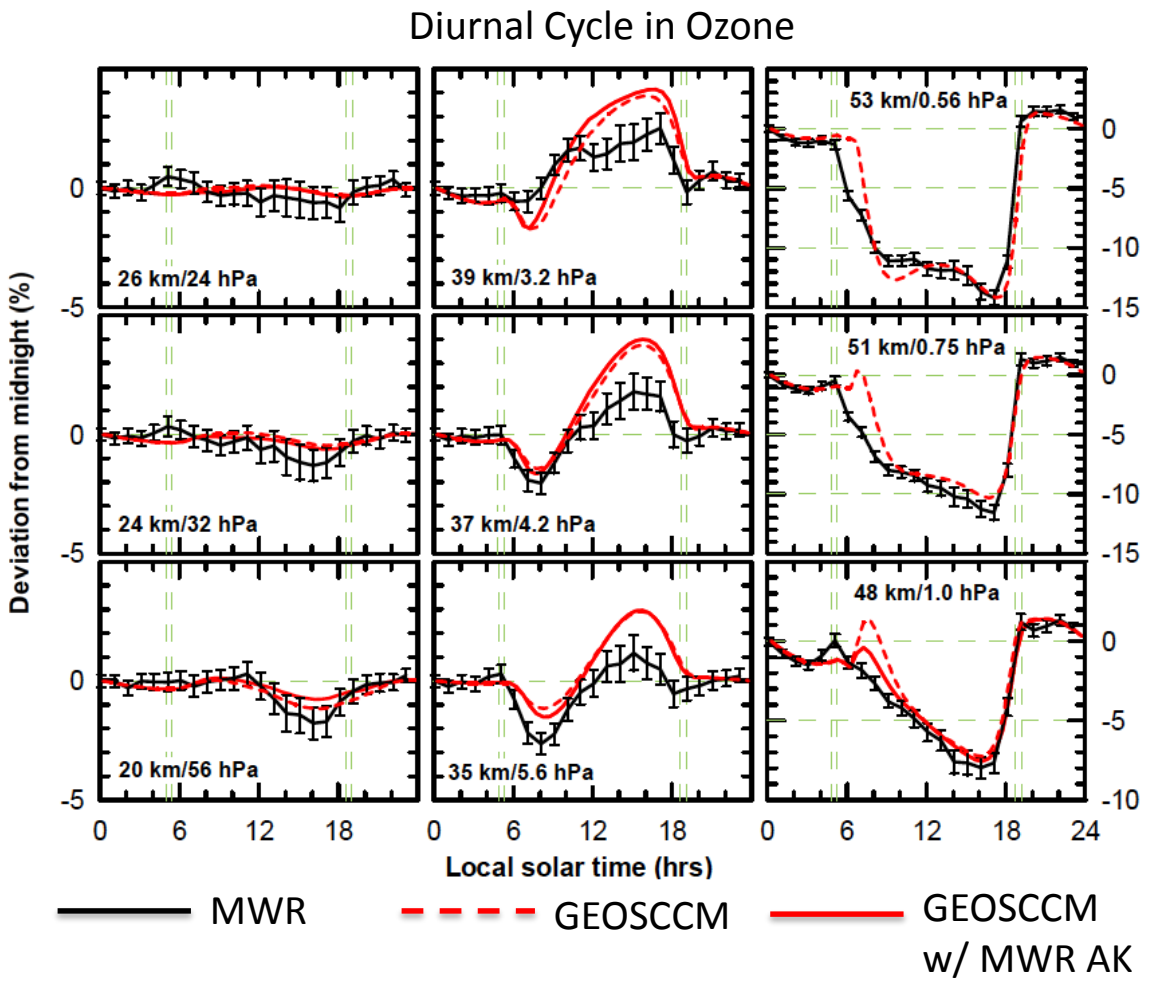
Quantifying the Diurnal Cycle in Stratospheric Ozone in Observations and GEOSCCM

Consistent long-term records of ozone require the bridging of measurements from multiple satellite systems.

These measurements are taken at different times of day depending on the satellites orbital characteristics.

Properly accounting for the diurnal variation of ozone increases consistency between datasets and reduces uncertainty in the merged record.

Using ground-based microwave radiometer (MWR) measurements of ozone at Mauna Loa and GEOSCCM simulations, the ozone diurnal cycle can begin to be quantified.



Parrish, A., Boyd, I. S., Nedoluha, G. E., Bhartia, P. K., Frith, S. M., Kramarova, N. A., Connor, B. J., Bodeker, G. E., Froidevaux, L., Shiotani, M., and Sakazaki, T.: Diurnal variations of stratospheric ozone measured by ground-based microwave remote sensing at the Mauna Loa NDACC site: measurement validation and GEOSCCM model comparison, Atmos. Chem. Phys., 14, 7255-7272, doi:10.5194/acp-14-7255-2014, 2014.